

He states that the Caspian is entirely isolated.<sup>1</sup> Herodotus, as has been stated, held the same opinion, yet, in spite of all the authority of Aristotle and his predecessor, this correct notion was abandoned from the time of Alexander to that of Ptolemy.

Aristotle's researches on marine animals were of distinct scientific value. He HIS RESEARCHES ON MARINE ANIMALS. named and described, more or less minutely, one hundred and sixteen species of fishes, about twenty-four species of Crustaceans and Annelids, and some forty Molluscs and Radiates, making a total of one hundred and eighty species inhabiting the Ægean Sea; and the student is still reminded of his study of the anatomy of *Echinus*, by the significant name of "Aristotle's Lantern" applied to its masticatory apparatus.

One of Aristotle's pupils, Dicæarchus,<sup>2</sup> adopted a useful modification in the construction of charts; he divided the known world by a longitudinal line, in the sense of our equator, along which stadia were marked. The maps of Hecataeus and Anaximander were merely representations or pictures, without any scale. Thanks to this graduation of Dicæarchus, it was possible to record in a more precise manner than formerly the various journeyings by land and sea. (See Plate II.) DICÆARCHUS.

Theophrastus,<sup>3</sup> another disciple of Aristotle, has preserved notices of the little known regions beyond the Pillars of Hercules. He states that the Phœnicians of Gades, driven by east winds, had discovered after four days' navigation, shallow banks covered by certain kinds of sea-weeds, where tunny-fish abounded, a prodigious number of which were captured. He also reports that, at a distance of several days' voyage from the Columns, they discovered a large island, uninhabited, fertile, covered with woods, and with navigable rivers. It was partially colonised by the Carthaginians, but subsequently abandoned. This is the earliest notice of the Fortunate Islands of the west, so often referred to by ancient geographers. The island is spoken of in such a manner as to identify it with Madeira, but some authors have suggested that America is here indicated.

To the time of Aristotle belongs the voyage of Nearchus,<sup>4</sup> who conducted the fleet of Alexander from the mouths of the Indus to those of the Euphrates. This is often regarded as the first navigation of the Indian Ocean, the voyage of Scylax in the same seas being forgotten or disbelieved. Arrian and Pliny<sup>5</sup> have preserved a full and authentic record of this remarkable cruise, which, however, had no great influence on commerce or civilisation, and made no special additions to our knowledge of the ocean. NEARCHUS.

The Ptolemies—the successors of Alexander in Egypt—showed a remarkable solicitude for the sciences. Among the writings of the many learned men of the Alexandrian school those of Eratosthenes,<sup>6</sup> on geodesy, astronomy, and geography, are specially worthy of notice, from their great influence on the progress of geographical investigation. They, in particular, prepared the way for those of Hipparchus. It appears from the statements THIRD CENTURY B.C. ERATOSTHENES.

<sup>1</sup> A different opinion is attributed to him in the treatise *De Mundo*, but that work is generally regarded as spurious.

<sup>2</sup> 326 to 296 B.C.

<sup>3</sup> Flourished about the commencement of the third century B.C.

<sup>4</sup> Took place in 325 to 324 B.C.

<sup>5</sup> Pliny, *Hist. Nat.*, vi. 23 *et seq.*

<sup>6</sup> 276 to 196 B.C.